in a nozzle during the expansion of the steam, a certain amount of the energy is lost due to friction, and as in the impulse blade, a certain amount of the inlet velocity *w* is also lost. The actual equation thus becomes:

$$C^2 = 2g]h\^ + w\^ \quad \ldots\ldots\ldots\ldots\ldots\ldots (4)$$

The coefficients <*f*> and ^ are thus very closely allied to the coefficients for impulse nozzles and blading.

On leaving the fixed blading the relative velocity *w* at which the steam enters the moving row is obtained by subtracting the blade velocity *u*| and as it has been agreed to accept the mean value of the specific volume of steam, it is obvious that the velocities C and *w* are the same for both the fixed and moving blades. Consequently the velocity triangles are the same.

Change of tangential velocity! A T> r A r«
in moving blade) ~~~ Ab + AU
= 2C cosa — *u*|

work done per pound of steam = $\frac{2\ M \text{ cosa} \quad u''}{g}$.

Dividing this by the sum of the heat drops in the fixed and moving row, 2/5, we have the efficiency of blading:

*2,Cu cosa — if** ,N

To convert this expression into terms of the ratio *r — u/C* from equation (4).

C^2

Also for the velocity triangle

w =z C* + u* — zCu* cosa.

Inserting these values in (5) gives an expression:

cosa — u(>*^{2}

C2 — i/r2(C² + *if - 2Ctl* COSa)

(2r cosa — r^2)^^{2}

(2r cosa — r^2)^^{2} + (i — ^^{2})

Taking mean values, we have *cj>* = 0*955, ^ ^ °"8, and the normal blade angle of 20°, giving cosa = 0-9397, and

— O-9I7-^{2}

B i-27 — O-64?*^{2} + 0-36'

The curve corresponding to this equation is shown at C in fig. 7. It

will thus be seen that the maximum efficiency of reaction blading occurs at approximately twice the ratio for the maximum efficiency of the simple impulse stage shown at C; but since a pressure drop occurs in both fixed and